

## TWO NEW SPECIES OF *ENTEROPOGON* (POACEAE: CHLORIDEAE) IN AUSTRALIA

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### Summary

*Enteropogon ramosus* is described and the new combination *Enteropogon paucispiceus* is made. A key to the six species of *Enteropogon* in Australia is given.

Different diagnostic characters have been used to differentiate the genera *Chloris* and *Enteropogon*. Some workers (Clayton, 1967; Renvoize, 1974) place greater emphasis on the number of spikes in the inflorescence whereas others (Lazarides, 1972; Anderson, 1974) regard the type of spikelet compression to be of greater significance. I agree with the conclusions of the latter authors that spikelet compression (dorsal in *Enteropogon*, lateral in *Chloris*) is of greater value than the character of spike number in distinguishing between these genera. (Clayton (1982) has recently altered his previous views on the generic limits of these genera by transferring three American and two African species from *Chloris* to *Enteropogon*). Another difference between the two is the type of starch grain possessed by them, being simple and angular in *Enteropogon* and compound in *Chloris* (Tateoka, 1962). The occurrence of simple grains in *E. acicularis* and *E. dolichostachyus*, Australian species previously placed with *Chloris*, reinforces the thinking of Lazarides and Anderson.

According to the most recent taxonomic treatment of *Enteropogon* in Australia (Lazarides, 1972) four species, two of which are divided into infraspecific taxa, can be recognised. One species *E. unispiceus* (F. Muell.) W. D. Clayton is treated as having two varieties, var. *unispiceus* and var. *paucispiceus* Lazarides and another *E. acicularis* (Lindl.) Lazarides is reported to exist in two forms which are not assigned a taxonomic rank.

When the Queensland Herbarium material of *Enteropogon* was recently examined during the course of my preparing a key to the grasses of Australia, I observed that the sorts of differences which exist between the infraspecific taxa of Lazarides are of a similar magnitude to those he accepted for distinguishing between the species. Also ecological work on the Brigalow Research Station, 32km NW of Theodore, Queensland, where all the infraspecific taxa recognized by Lazarides occur, has shown all of the taxa are clearly distinguishable from each other (R. W. Johnson, pers. comm.). For this reason it is now proposed to elevate these infraspecific taxa to species rank. Nomenclaturally this entails the creation of one new combination and the naming of one new species.

**Enteropogon paucispiceus** (Lazarides) B. K. Simon, comb. et stat. nov.

*Enteropogon unispiceus* (F. Muell.) W. Clayton var. *paucispiceus* Lazarides, Austr. J. Bot. Suppl. 5: 27 (1972). **Type:** Queensland. Moreton District: Glenore Grove, near Lawes, 16 Feb 1950, Bisset S671 (CANB sub CANB 22154, holo; BRI) photo of holo. Plate 1.

**SPECIMENS EXAMINED.** (All BRI). **Queensland.** LEICHHARDT DISTRICT: Brigalow Research Station, Aug 1963, *Johnson* 2669, Aug 1965, *Johnson* BRI 060315; 10 miles [16km] NW of Banana, Jul 1959, *Johnson* 883; Reedsdale, April 1961, *Johnson* 2246; 33 miles [53km] SW of Nebo, June 1962, *Story & Yapp* 22; Cottenham, May 1960, *Johnson* 1714; 23 miles [37km] S of Rolleston, Feb 1960, *Johnson* 1278; c. 45 miles [72km] N of Marlborough, May 1960, *Johnson* 1780; Redbank, Jun 1960, *Johnson* 1955. PORT CURTIS DISTRICT: Greycliffe, Apr 1937, *White* 10864. DARLING DOWNS DISTRICT: between Miles and Drillham, Feb 1935, *Blake* 7699; between Pittsworth and Millmerran, May 1934, *White* 10062; Calala, Apr 1960, *Johnson* 161, *Johnson* 1619; Palardo, May 1934, *Blake* 5843, Holcombe via Tara, Jun 1930, *Salter*; Kindon Station, Dec 1938, *Smith* 570; 30 miles [48km] NE of Goondiwindi towards Millmerran, Jul 1958, *Johnson* 507; Yelarbon, Feb 1936, *Blake* 10467; between Ingleswood and Millmerran, Jan 1934, *White* 9791.

**Enteropogon ramosus** B. K. Simon, species nova affinis *E. aciculari* (Lindley) Lazarides sed culmis altioribus, ramosis, cum spicis 2–6(–8), foliis raro crispis exorientibus aequae secus culmum totum, culmis et foliis nunquam pilosis differt, affinis *E. minuto* Lazarides et *E. dolichostachyo* (Lag.) Keng ex Lazarides sed flosculi inferni longiore et spiculis laxe imbricatis differt. **Typus:** *Simon* 2810 & *Clarkson* (BRI sub BRI 228353, holotypus; CANB, K, L, NSW isotypi).





Plate 1. Holotype of *Enteropogon paucispicus* (Lazarides) B. K. Simon



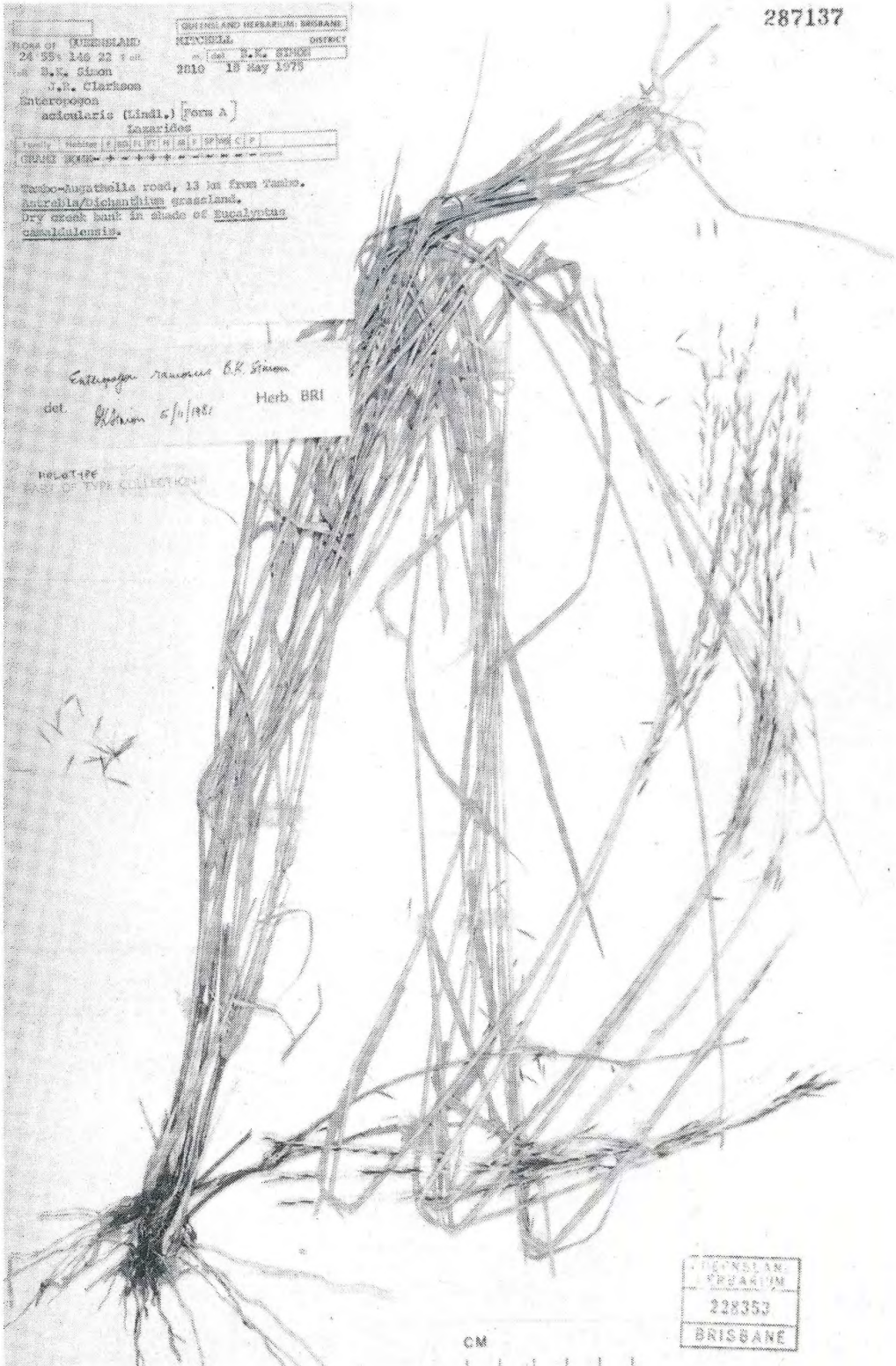
287137

QUEENSLAND HERBARIUM, BRISBANE  
 DISTRICT  
 KITCHING  
 24 55s 146 22 E. of  
 S. K. SIMON  
 J. K. CLARSON  
 2010 18 May 1975  
 Enteropogon  
 acicularis (Lindl.) [Form A]  
 Eozarides  
 Family: Poaceae (F. INDIGLUTINACEAE) SP. NO. C.P.  
 GRAIN: none

Tambo-Mugathella road, 13 km from Tambo.  
*Stroemia* grassland.  
 Dry creek bank in shade of *Eucalyptus*  
*causcaldensis*.

*Enteropogon ramosus* B.K. Simon  
 det. *B. K. Simon* 6/10/88 Herb. BRI

RELATIVE  
 PART OF TYPE COLLECTION



QUEENSLAND  
 HERBARIUM  
 228353  
 BRISBANE

CM

Plate 2. Holotype of *Enteropogon ramosus* B. K. Simon

*Chloris acicularis* Lindley var. *queenslandiae* Domin, *Bibl. Bot.* 20 (85): 368 (1915). **Type:** Queensland. Burke District: Cloncurry, Feb 1910, *Domin* (PR, holo; BRI, photo of holo).

*Enteropogon acicularis* (Lindley) Lazarides *Form A*, *Aust. J. Bot. Suppl.* 5:33 (1972).

Caespitose perennial to 100 cm tall. Culms glabrous, smooth, glaucous, terete, 4–6–noded, divided with up to 8 branches from the lower nodes. Leaf sheaths to 17 cm long rounded on the back, glabrous, smooth or with scattered tubercles towards the apex, glaucous. Ligule a ciliolate membrane to 0.3 mm long. Leaf blades glaucous, linear, to 20 cm x 5 mm, semi-cordate at the base, tapering and filiform at the tip, twisting abruptly at intervals on maturity, margins scabrous. Inflorescence of 2–6(–8) digitate spikes to 15 cm long, each of up to 50 spikelet. Spikelets of 2(–3) dorsally compressed florets, the lowermost 6–9 mm long (without the awn) and much larger than the other(s). Glumes remaining attached to the rachis at maturity, hyaline, linear, the keels scabrous and extended into a short mucro; the lower 2–3.5 mm long, the upper 3.5–7 mm long. Lowest lemma 6–9 × c. 1 mm, pallid to mauve, scaberulous, acuminate, 3–nerved, with a pale scaberulous awn 10–14 mm long; callus 0.5–2 mm long, rounded at the apex, with lateral hairs to 1.5 mm long. Palea 5–6 × c. 0.5 mm, 2–nerved, indented on the back, acuminate. Anthers 3, 1.2–1.5 mm long. Grain 2–5 × 0.5 mm, yellow to orange. Second floret on a rachilla internode to 2 mm long, reduced to a scaberulous mauve lemma 2–4 mm long, bearing a scaberulous awn 7–12 mm long. Third floret consisting of a hyaline lemma c. 1.5 mm long with an awn c. 5 mm long, or absent. Plate 2, Fig. 1.

SELECTED SPECIMENS. (All BRI). **Western Australia.** Northern Province—Gardner District: near Ord R. Station, Jul 1949, *Perry* 2403. Eremaean Province—Carnarvon District: Barradale Roadhouse, North West Coastal Highway, Mar 1980, *Simon* 3771 & *Stretch*. **Northern Territory.** Darwin and Gulf: Springvale Station near Katherine, *Giles* 66. Central North: 2 miles [3 km] W of Argadargada, Jun 1962, *Nelson* 320. Central South: 9.5 miles [15 km] NNW of Alice Springs, May 1955, *Lazarides* 5181. **South Australia.** Flinders Ranges: Mt Lyndhurst, May 1898, *Koch* 3. **Queensland.** COOK DISTRICT: Gilbert River, Feb 1927, *Brass* 1722. BURKE DISTRICT: 17 miles [27 km] NE of Duchess, Mar 1954, *Lazarides* 4389. NORTH KENNEDY DISTRICT: Mt St John near Townsville, Jan 1931, *Hubbard* 6952 & *Winders*. SOUTH KENNEDY DISTRICT: Pine Hill, Dec 1975, *Simon* 2914 & *Jacobsen*. PORT CURTIS DISTRICT: Emu Park, Mar 1935, *Blake* 7876. LEICHHARDT DISTRICT: Brigalow Research Station, Aug 1965, *Johnson* BRI 060314. GREGORY NORTH DISTRICT: between Selwyn and Boullia, Jun 1934, *Blake* 6430. GREGORY SOUTH DISTRICT: Nockatunga, June 1936, *Blake* 11845. MITCHELL DISTRICT: 1 km S of Tambo towards Augathella, May 1975, *Simon* 2810 & *Clarkson* (type). WARREGO DISTRICT: Chesterton, Apr 1936, *Blake* 11095. MARANOVA DISTRICT: between Amby and Euralla, Jan 1931, *Hubbard* 6346 & *Winders*. BURNETT DISTRICT: Monto, Mar 1937, *Blake* 12849. DARLING DOWNS DISTRICT: Chinchilla, Feb 1978, *Lithgow* 20 (BRI 231823). **New South Wales.** North Far Western Plains: Cobham, Dec 1969, *Martensz* 237. Also occurs in VICTORIA (*Lazarides*, 1972). Specimens examined: 97.

*E. ramosus* is the most common species of *Enteropogon* in Australia with a distribution in all States except Tasmania. It differs from *E. acicularis*, which has been recorded from all States except Victoria and Tasmania and with which it has been confused, by a number of morphological characters which may be synoptically expressed as follows:

Plants 60–100 cm tall, glabrous; leaves arising from the whole culm length, the blades twisting abruptly at intervals at maturity; culms branched at most nodes, with up to 8 branches; spikes 2–6(–8), spreading in a single plane .. **E. ramosus**

Plants up to 40 cm tall, usually pilose; leaves usually arising from the base of the culm, the blades seldom twisting abruptly; culms usually solitary; spikes 7–22, arranged in several planes ..... **E. acicularis**

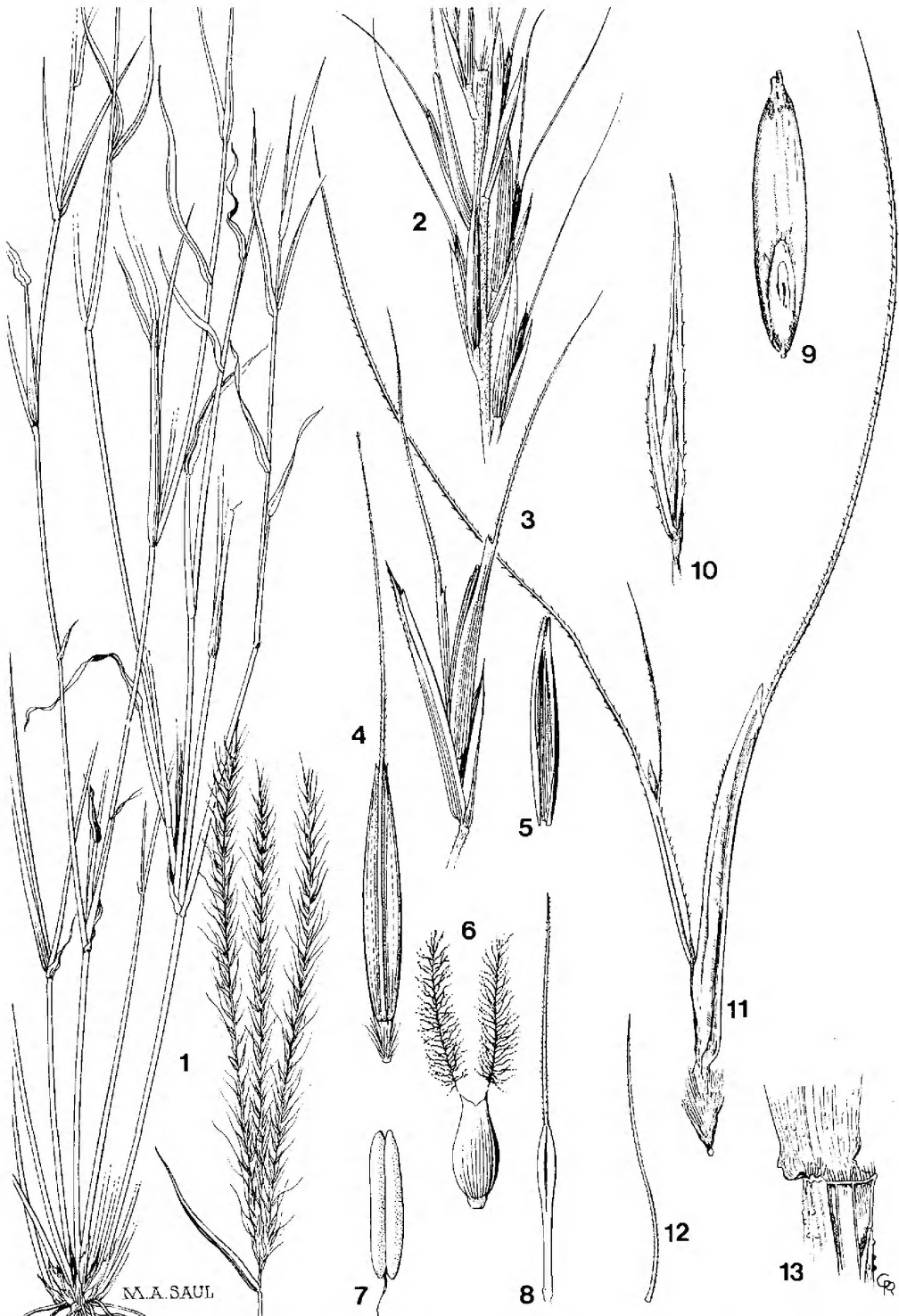
*E. ramosus* also differs ecologically from *E. acicularis* in that it tends to grow on duplex or texture contrast soils with sand overlaying clay whereas *E. acicularis* is generally restricted to cracking clay soils (R. W. Johnson, pers. comm.).

As *Enteropogon acicularis* sens. lat. has been re-constituted into two species and the nomenclature of one of the segregates has been clarified it is necessary to do likewise to the other.

**Enteropogon acicularis** (Lindley) Lazarides, *Austr. J. Bot. Suppl.* 5:31 (1972).

*Chloris acicularis* Lindl. in *Mitch.*, *J. Exped. Interior. Trop. Aust.* 33 (1848). **Type:** New South Wales, Bogan River, 1846, *Mitchell* 115 (CGE, holo; BRI, photo of holo).

*Chloris moorei* F. Muell., *Linnaea* 25:444 (1853). **Type:** South Australia, Crystal Brook, Dec 1851, *F. Mueller* (MEL 104204, syn; BRI, photo of syn); inter Rocky Creek and Rocky River, 6 Nov 1851, *F. Mueller* (MEL 104203, syn; BRI, photo of syn).



**Figure 1.** *Enteropogon ramosus* B. K. Simon 1, habit ( $\times \frac{2}{3}$ ); 2, portion of spike showing 6 spikelets ( $\times 4$ ); 3, spikelet with 2 florets, side view ( $\times 8$ ); 4, lower lemma, dorsal view ( $\times 8$ ); 5, palea, ventral view ( $\times 8$ ); 6, mature ovary and stigmas ( $\times 17$ ); 7, anther ( $\times 17$ ); 8, upper lemma, dorsal view ( $\times 8$ ). From *Lithgow* 20 (BRI 231823) & *Lithgow* BRI 248540. 9, grain ( $\times 8$ ). From *Simon* 2810 & *Clarkson*. 10, glumes ( $\times 8$ ); 11, florets of a spikelet with 3 florets ( $\times 8$ ); 12, third floret ( $\times 8$ ). 13, junction of leaf sheath and blade showing ligule ( $\times 8$ ). From *Winders* 7418.

The circumscription of *E. acicularis* is restricted to Form B of Lazarides in Austr. J. Bot. Suppl. 5:33 (1972). This was verified by an examination of the type specimen in which the spike number was found to be not less than 10 and the spike length between 13 and 16 cm and divaricating. The spike number of 8–9 in the type description of *Chloris acicularis* is probably due to the fact that some spikes in the type specimen are broken off at the base and were not taken into consideration in formulating the description.

In my previous key to *Enteropogon* (Simon, 1980:48) reference was made to an undescribed species (*Lithgow* BRI 231823) which at the time was thought to be another new species. Further study however has shown it to be a small form of *E. ramosus*. The latter key and that of Lazarides (1972) is now superseded by the following key.

1. Leaves mostly basal on the culm ..... 2  
    Leaves produced uniformly up the culm ..... 4
2. Inflorescence spikes usually more than 9, spreading in several planes ..... *E. acicularis* (Lindl.) Lazarides  
    Inflorescence spikes up to 4, usually arranged in a single plane ..... 3
3. Spikes 1(–3); leaf blades filiform or if flat up to 1 mm wide ..... *E. unispiceus* (F. Muell.) W. D. Clayton  
    Spikes 3–4; leaf blades flat, more than 1.5 mm wide ..... *E. paucispiceus* (Lazarides) B. K. Simon
4. Lemma of the fertile floret 6–9 mm long; spikelets loosely overlapping ..... *E. ramosus* B. K. Simon  
    Lemma of the fertile floret up to 5 mm long; spikelets tightly overlapping ..... 5
5. Spikes flaccid; lemma of the fertile floret 3–3.5 mm long ..... *E. minutus* Lazarides  
    Spikes stiff; lemma of the fertile floret 3.5–5 mm long ..... *E. dolichostachyus* (Lag.) Keng ex Lazarides

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#### References

- ANDERSON, D. E. (1974). Taxonomy of the genus *Chloris* (Gramineae). *Brigham Young University Science Bulletin Biological Series* 19(2):1–133.
- CLAYTON, W. D. (1967). Studies in the Gramineae: XIII. Chlorideae. *Kew Bulletin* 21:99–110.
- CLAYTON, W. D. (1982). Notes on subfamily Chloridoideae (Gramineae). *Kew Bulletin* 27:417–420.
- LAZARIDES, M. (1972). A revision of Australian Chlorideae (Gramineae). *Australian Journal of Botany, Supplementary Series* 5:1–51.
- RENVOIZE, S. A. (1974). Gramineae 2:331. In Polhill, R. M. ed. *Flora of Tropical East Africa*. London: Crown Agents for Oversea Governments and Administrations.
- SIMON, B. K. (1980). A key to Queensland Grasses. Botany Branch, Queensland Department of Primary Industries, Technical Bulletin 4.
- TATEOKA, T. (1962). Starch grains and endosperm in grass systematics. *Botanical Magazine, Tokyo* 75:377–383.

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